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OTHER AFFECTIONS.

By HENRY PALMER, A. M., M. D.,

Formerly of London, England; late Professor of Electrolytics in the University of Toronto, Canada West.

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PREFACE.

Since the publication of my pamphlet on the application of electricity as a remedial agent, in which its curative powers have been fully tested, a sufficient number of facts have accumulated to warrant the belief that we have at last discovered, in mild streaming electricity, the management of an agent of unequaled power in the treatment of disease. Much has been said and written upon the medical application of electricity; but the hitherto general use by practitioners of the broken currents given out by the electro-magnetic and magneto-electric machines, are the strongest proofs of the ignorance still prevailing with regard to this young but important branch of the physics; and although electricity is by no means advocated as a specific for all the ills of life, nor to the exclusion of other remedial means, for there are cases where either, used alone, might have failed, which, if combined, would have succeeded, yet, as a remedial agent, electricity furnishes us with a power, in comparison with which everything else becomes subordinate.

In an age like ours, in which the collateral sciences are making such rapid progress, the healing art or medical science cannot afford to stand still, although it must necessarily be the last to move on. The

microscope is already unfolding to the astonished gaze a new anatomy of parts that have hitherto been hidden from view. Chemistry is lending its mighty aid, and electricity steps in the last, because the finest substance we have to deal with, and acquaints us with those principles or governing laws upon which is based the true theory of disease and its method of cure.

Those principles or governing laws are briefly sketched here, (with the view at some future period of further elaboration,) in order that the greatest space of these few pages may be devoted to the method of applying the galvanic current in a few of the most prominent forms of disease.

I will merely add, that this little treatise is more especially designed for the comprehension of the unprofessional. I have therefore endeavored to avoid technicalities, humbly presenting it to the inquiring and candid reader with the request that he will overlook its defects in style and expression, not only for the sake of the truths that may be gleaned from it, but from an earnest desire to assist in placing the treatment of disease on a more simple and rational footing than it at present occupies.

CHICAGO, ILL., 1st December, 1866.

ELECTRO PHYSIOLOGY.

Electricity prevades all bodies, both animate and inanimate. In the former, a portion is constantly polarized by the living organism; in the latter, it is always in a state of rest, unless the molecules of the substance are disturbed. There are, therefore, two states in which this agent can be placed—first, a state of rest; second, a polar state of action.

That in action is termed free or positive, while that in rest is called latent or negative.

The positive state is warm and expansive.

The negative one is cold and contractive.

Two positive states repel each other, so do two negative ones; but the positive and negative states attract each other, in order to assume a state of rest. All the alkalines go over to the negative, while all the acids proceed to the positive state.

The positive poles of electro motive molecules are always turned in the direction that the electric current goes, so that the negatives point in the direction from whence the current comes; the head of the current is therefore warm and expansive, while the tail of the current is cold and contractive.

Wherever an electric current goes, there magnetism flows around the center of its path.

The animal system requires a due amount of electricity in a polar state, in order to enjoy the highest amount of health and vigor.

When the positive electricity is deficient, the organic functions become torpid, more or less according to the deficiency. When the positive force is in excess, the organic action will be proportionately excessive.

An undue share of electricity may be distributed all over the body, as evidenced in fevers, or it may be concentrated in one organ or part, as in local pain, heat, swelling; in either case, causing the acids in the system to become rapidly absorbed. On the contrary, a deficient amount of positive electricity in the animal produces the reverse of the foregoing, viz.: *chill*; or it may be deficient in one organ or part, evidenced in slow digestion, torpidity of the liver, etc., causing the acids to predominate over the alkalines.

Electricity being the finest substance in the body, is the first to become affected in disease, then the nerves; these, ramifying upon the surfaces of every conceivable portion of the body, become lost or end in the paranchema of the organs, affect the soft, and lastly the hard solids of the body.

The existing state of electricity in the living body is influenced by the mental emotions of the mind, as well as by the outward physical agents, but by the former more directly than the latter. The emotions of love, hope and joy augment, while those of fear, revenge, or hatred diminish the electricity circulating in the system.

All chemical agents belonging to the class called

sedatives lessen, while those belonging to the class called excitatives increase the polarized electricity already circulating in the nerves; but they do so temporarily, and generally when in a great many cases the effects of a remedy should be produced locally only.

That in the normal action of the organism electricity proceeds from the nervous centers—the brain, the spinal column and several ganglia—along the millions of nerve chords, to their terminal ends, for the purpose of carrying on the functions of animal life, and the movements subservient to the will.

That in order to cure disease, we should act directly upon the electricity in that portion of the body that is affected, by means of another polarized electric current. The object can be only to rouse the electricity at rest into a state of polar action, or on the contrary to cause that already in excess to assume a state of rest.

The ingoing current produces negative effects, such as cold, contraction, etc.

The outgoing current produces positive effects, such as heat, expansion, etc.

When a current is sent in a direction from the roots or centers of the nerves, to their terminal branches, their excitability is lessened.

When a current is sent in the opposite direction, the excitability of the nerves is increased; consequently, a portion of the positive state of electricity can be instantly changed into a negative one, and its results will be less heat and expansion, and less action in the capillaries. On the other hand, where weakness already

exists, a portion of electricity in rest can be roused into polar action, and the result will be warmth and increased action of the capillaries.

The circulation of the blood is governed by the electro-nervous fluid,* evidenced by the expansive and contractive movements of the respiratory and circulatory apparatus.

That when an excessive share of electricity is distributed to one part, the blood follows, as is evidenced in apoplexy, etc.

The electro-nervous current proceeds from the brain and spinal column, the positive poles of the nervous system, and the nerves serve as channels to conduct it downward and outward to every other part of the body.

The electro-muscular current proceeds from the interior of the muscular fasciculi and flows upon their outside longitudinal surfaces.

An excess or a deficiency of the electricity in polar action may occur either in the nerves or in the muscles, or in both together. When the electro-nervous force is abnormal in the nerves, it will be evidenced as follows, viz.:

IN THE SENSITIVE SYSTEM:

C, Pain—Neuralgia.

D, Loss of sensation—Anesthesia.

IN THE MOTER SYSTEM:

E, By involuntary movements of the body.

F, By paralysis in its circumscribed sense.

* Electricity is modified by the substance in which it resides. In the living animal it is more appropriately termed nervous force or fluid, because it is under the control of vitality—a higher relation of power.

When the muscular electricity is abnormal, either the acid or the alkaline elements are rapidly absorbed, and the result is either a congestive or an inflammatory state. Disease, for all practical purposes, may, therefore, be divided into two great classes, viz.:

A, POSITIVE, or warm and inflammatory.

B, NEGATIVE, or cold and congestive.

In applying electricity to the nerves, our object can only be to increase or decrease their excitability. In order to lessen their excitability, the positive disk is placed upon the spine, and the negative one over the termination of the nerve. We shall thus have placed the poles of a like nature together; consequently, a portion of the natural electricity circulating in the part is repelled, according to the law or principle—like polarities repel. Uniting, it becomes latent, agreeable with the principle—opposite forces combine in order to assume a state of rest; consequently, the excitability of the nerves is decreased. By reversing the foregoing arrangement of the poles, we must necessarily place the unlike polarities together. Now, an attraction takes place, and the electricity that was previously made to assume a state of rest, by the other operation, is, by this, set free again, and the excitability of the nerves will be augmented. When the sensitive nerves are more particularly influenced, it will be sometimes necessary to galvanize the cutaneous ends of the fibres—at other times over the localities of the roots only.

When disease affects the other structures of the body, remedies, either of an acidifying or an alkaline

nature, combined with the electrical treatment, facilitate the cure. In class A, the acids of the system are rapidly absorbed, hence acids and the refrigerants are called for. In class B, chemicals of an alkaline nature are required.

In localizing the application of electricity, it is necessary to act upon the muscular electricity of the part.

When a continuous, uninterrupted voltaic current is transmitted through the body, it passes straight through from the positive to the negative disk, and no where else. The center of the current's path through the body may be termed the point of neutrality. To this center, therefore, the ingoing current is negative and cold. The outgoing current from this point is the positive and warm half. In illustration of this vitally important fact—place the naked disks upon the delicate skin, one on each arm. No sensation of heat is experienced under the positive, where the current enters; but where the current makes its exit out of the body, at the negative one, the sensation will be warm, hot, and perhaps unbearable, agreeable with the principle. The electro motive molecules turn all their positive poles in the direction which the current goes, and their negative ones in the direction from whence it comes; consequently, one-half of the current produces the positive, while the other half gives the negative effects.

In the electrical treatment of class A, it must be obvious that, in order to exert a curative influence, the affected part must be brought under the control only of the ingoing, negative, or cooling half of the current.

On the contrary, those of class B must be submitted to the influence only of the outgoing, positive, or warm half of the current.

It is evident, from what has been stated, that vibratory or shock currents pass up and then down the structures many thousand times in a minute, and consequently the electro motive molecules of these parts are being constantly upset, or made as rapidly to reverse their positions. The electro-magnetic and magneto-electric machines are therefore wrong in principle; the current emanating from them contains a very small amount of electricity, but of extremely high tension or force.

It is the opinion of those most eminent for their success in this young branch of physics, that it cannot be too much borne in mind, that, for medical purposes, the indispensable requisites in a battery are, weak tension, great quantity, and a continuous polar current. The commission before whom the experiments were conducted, at the school of medicine in Paris, stated, in their report, that they had reason to conclude that a current from the voltaic battery penetrates and affects the nerves and muscular structures more deeply than ordinary machines. [Becquerel, vol. 1.]

In directing attention to a voltaic battery so small as to be conveniently carried in the waistcoat pocket, it might at first sight be imagined, from its diminutive size in comparison with the large shock machines, that the evolutions of electricity evolved from so small a compass could lend but little aid as a therapeutic agent. Let it be remembered, however, that the

greatest living authority* of the day in this matter has stated, that during the decomposition of nine grains of salt and water an amount of electricity is set free exceeding in quantity the amount displayed in the most terrific flash of lightning. Becquerel has also shown that the electricity evolved during the decomposition of a few grains of common salt is capable of producing chemical changes in every respect analagous to those which, in the hands of Sir Humphrey Davy, required the Royal Institution's enormous batteries of six hundred double plates to demonstrate. The spiro-tubular form of my battery, unlike those of any other, is perfectly free of all extraneous material between the battery's elements, and therefore allows an extraordinary amount of metal surface to come in contact with the exciting agent, vinegar, producing an enormous quantity of electricity with sufficient intensity to overcome the resistance of the body. It may be interesting to observe, that every alternate element throughout this battery twists in a contrary direction to its neighbor, producing an additional or higher relation of electric power. Professor Wedeman, in 1862, read a paper before the Royal Society, calling their attention to the peculiarity of the spiral twisting of plants, some tending in one direction and others in the contrary one; and stated, that after passing a current through an iron wire, twisted in the direction of a right-handed screw, the wire at the end became positively magnetic, and that when he twisted it in the contrary direction, and the current passed through, it became negatively

* M. Faraday.

magnetic; thus demonstrating that electricity flows in plants, and that those which twist in a direction with the sun's course are positively magnetic, while those, on the contrary, which turn in the opposite direction are negatively magnetic.

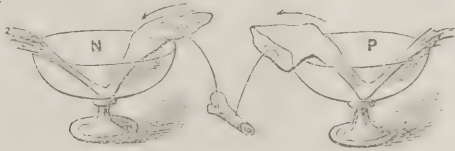
Faraday has shown that it takes a current of electricity of sufficient power to keep a platinum wire, the $\frac{1}{164}$ of an inch in diameter, red-hot $2\frac{3}{4}$ minutes, to decompose one grain of water. The quantity of frictional electricity required to produce the same effect, would be that furnished by 800,000 discharges of a battery of Leyden jars, exposing 3,500 square inches of surface.

The chemical powers of this little instrument are evidenced in the decomposition of water into its respective gases, and as a counter-irritant, producing visication in one minute.

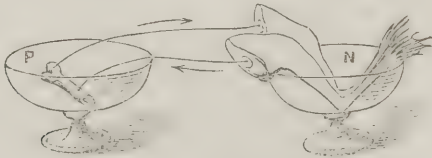
During a series of experiments on living animals, recently shown at the school of medicine in the University of Toronto, some very important and practical illustrations were exhibited, showing the physiological effects of the volta-electric current on the nerves and muscles of the frog.

No. 1. The frog was prepared according to Galvani's method, each of the legs, being attached by the sciatic nerves to a small portion of the spine, *lumbar plexus*, were placed in separate wine glasses containing slightly acidulated water. The instant contact was made by the poles of my small battery with the solution in each glass, contractions occurred, and the frog leaped out. This effect was repeatedly produced, the current neces-

sarily flowing *up* the nerves of one leg and *down* that of the other, in order to complete the circuit. The points of the arrows in the cut indicate the direction



of the current. The results of this direct and inverse current went to show that the contractions occurred only under the influence of the direct current in leg N, which kicked the other out; and when the poles of the battery were reversed, the current circulating in the contrary direction, the instant contact was made, P now kicked N out of the glass.



No. 2. Both legs were now placed in one glass, and the portion of the spine attached by the nerves in the other glass, and connection made with the poles of the battery. The direct current was allowed to traverse the nerves for thirty minutes, when the muscles ceased to contract, whether the circuit was made or broken. Upon reversing the poles, the inverse current now flowing upon the nerves, the muscles again contracted, showing conclusively that the diminished excitability

of a nerve caused by the direct passage of an electric current can be instantly augmented by an inverse one.*

The above experiments prove conclusively:

1st. That moter nerves are only excited into action by the influence of the direct current.

2d. That when this direction is sustained the nerve rapidly loses its excitability, and in a certain time becomes paralyzed.

3d. That the lost excitability of the nerve is quickly restored by the inverse current.

The results of the above experiments go to show that vibratory or shock currents should never be used upon paralyzed nerves. The electro-magnetic and magneto-electric machines are therefore wrong in principle.

No. 3. Voluntary motion and sensation being destroyed in a living frog, by severing the spinal cord a little below the cerebellum, reflex action was shown by merely touching the web of the frog's foot, when the limbs were violently drawn up and remained so. The heart was now exposed, and upon its apex was placed the point of a fine needle. The other end was attached to a nicely balanced lever. The regular pulsations of the heart alternately raised and depressed the other end thereof, causing it to describe an arc of four or five degrees upon an index scale, proving that the motions of the heart and the abdominal visera essentially depend upon the spinal cord.

* The sciatic nerves of a frog recently killed retain their excitability forty-eight hours after death.

Some of these experiments have already been made by Matteucci and others, and he came to the conclusion that the electric current was produced by the chemical action of nutrition in the muscle itself; and that when a continuous electric current is sent from the brain to the extremities, the muscular electricity is prevented from entering into the nerve, and the latter loses its excitability; and that when the electric current is sent in the opposite direction the muscular current accumulates in the nerves, and its excitability is augmented. Du Bois Raymond, however, conclusively demonstrates that electric currents exist in all parts of the nervous system, independently of the muscles. The apparatus he employed to demonstrate these facts was a coil of copper wire of three miles and a half in length, wound round a wooden bobbin, which was fixed upon a stand. Each end of this wire terminated in a separate minute cushion, made of layers of blotting paper, which rested firmly on the edges of two glass tumblers. A magnetic needle upon an index scale stood at some little distance, but perfectly isolated from the bobbin of wire. A small piece of nerve was now placed in contact with both the cushions of paper, and it was found that, when contact was made with the longitudinal sections only, or with the transverse artificial sections only, the needle remained perfectly stationary at zero; but the moment the transverse section of the nerve touched one cushion, and the longitudinal section the other, the coil of wire became charged and induced the needle to describe an arc of ten degrees upon the index scale; a piece of muscle produced the same phenomena: thus

shewing that electricity is generated in the interior of the nerves and muscles, and that the positive force circulates upon the outside surface of these structures.

In order to demonstrate the circulation of electricity in the muscular action of living animals, Du Bois Raymond now placed the ends of the coil of wire in two separate basins of salt water ; and upon placing a hand in each solution the needle remained pointing at zero, so long as the hands remained quiet and alike passive, but the instant one of the hands was closed, the other remaining passive, the coil became charged and deflected the needle.

Du Bois Raymond therefore came to the conclusion, that the electric current is produced by electro motive molecules in the nerves as well as in the muscles, and that they are to be considered as in the condition of a closed circuit ; that every current produced by a nerve is to be regarded as derived from a current circulating in the nerve itself.

That the nerves and muscles, together with the brain and spinal cord, are endowed during life with an electro motive power.

That if any part of a nerve is submitted to the action of a permanent current, the nerve in its whole extent suddenly undergoes a material change in its internal constitution, and returns as suddenly to its former condition, on breaking the current. That the exciting current throughout the nerve sets in action electro motive elements, which turn all their positive poles in the direction in which the current goes and their negative ones in the direction from whence it comes.

“FARADAYZATION.”

This term is used to distinguish the plan of acting on the skin by means of the electric current, and is so called in honor of the great “Professor” Michael “Faraday.” Of all the remedies which art has furnished us with, there is none that will bear even comparison with electricity. As a counter-irritant, it induces electro-chemical decomposition on the skin, and, though applied on a small part of the surface for a few moments, instantly starts into action the millions of perspirable glands, and unlocks, as it were, the outlets of the system. The electric impression conveyed to the spinal cord finally, by reflex action, stimulates the fibres supplied with organic life, the blood vessels and lymphatics. Of all stimulants it is the last to fail, the most simple, and therefore the most natural, and is capable of arousing the functions of *all* the special senses; and it does seem somewhat remarkable that medical men should be so little practically acquainted with a subject, the importance of which Braithwait is continually bringing before the notice of the profession. There are three modes of acting upon the skin by the electric current:

1st. By the naked tin disk, which is moved rapidly or more slowly according to the delicacy of the skin.

2d. By placing the points of the silver *fouchette* on the skin, to induce vesication.

3d. By flagelating the delicate skin in extremely sensitive patients.

When the skin is wet it acts as a conductor, and the

current passes through without producing the effects required; it is necessary, therefore, to wipe and fan that part of the skin before making the application.

MANAGEMENT OF THE APPARATUS.

SOLUTION FOR DAMPING THE BATTERY.

Acetic acid, obtained of a druggist, reduced with water to the strength of strong vinegar.

Wet a small piece of sponge with the acid solution, and lightly, but thoroughly saturate both sides of each wing of the battery; then replace it in its case, taking care that the P on the battery and the one marked on the case shall be on the same side; hook on the conducting cords, and it is ready for use.

Be sure to rinse the battery, after using it, in a little cold water, wipe with a soft cloth, hang the instrument up until dry, then replace it in the case, and it will be fit for use on another occasion.

Keep the brass connections clean and bright. Be careful not to get the conducting cords wet, or the silver cord beneath the cotton will become tarnished and stop the current; when tarnished, the part becomes stiff, and may be readily detected by passing the strings through the fingers. The remedy is, to cut out the part, re-unite the silver cord, and cover over with the cotton again.

Note.—A new pair of strings will be forwarded by post to any address, on receipt of letter prepaid,

enclosing one dollar in postage stamps. Extra appliances can also be obtained by addressing the proprietor.

Whenever the *naked* metal plate or the fork is used, connect it with the cord leading from the N pole of the battery, or the required effects will not take place, while the other disk is *always*, in these cases, covered with the wet sponge, and held in the *patient's hand*.

When both tin disks are worn on the body, each one must have a strip of cotton cloth or paper the width of the tin disk, and about ten inches long, wrapped around it several times. These coverings must always be wet when used.

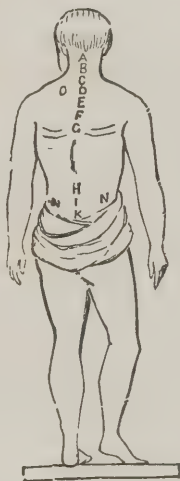
It must be borne in mind that the current comes up out of the battery at the anode pole or door marked P, passes along the conducting cord to that point of the body upon which its disk is applied, then goes directly through in as straight a line as possible, and comes out of the body at the point where the other disk is placed, then proceeds along the cord down through the cathode pole or door marked N, into the battery again, and so on, round and round continuously.

DISEASES REQUIRING THE ELECTRICITY CIRCULATING IN THE NERVES TO BE INCREASED.

In these affections an undue share of nervous force is in a state of *rest*; hence the nerves having lost a portion of their excitability, the result is weakness.

Treatment.—Rouse the latent electricity in the nerve into *polar action*.

General Debility,
Hysteria,
Amaurosia,
Deafness,
Loss of Smell,
Loss of Taste,



Loss of Voice,
Paralysis of other
Nerves,
Loss of Cutaneous
Sensation.

NEGATIVE STATES OF DISEASE.

GENERAL DEBILITY.

Application.—Place the soles of the patient's feet in a tepid solution of salt and water, of any strength; put a couple of hot bricks under the pan to keep up the temperature of the solution.

The solution must be in connection with the P disk. Wrap wet cotton round the N disk, and let the operator apply it high up on the nape of the neck, for one minute at A, then at B another minute, then C, and so on at each vertebræ, all down the spine—time occupied, forty minutes—every other day. Period of treatment, four weeks, unless the debility is attended with hypochondriasis, or hysteria, when the treatment will be one or two weeks longer. If the debility proceeds from losses and derangement of the generative organs, make the applications as directed under that head also, and attend to rule A.

Rule A.—Exercise without fatiguing the mind, retire and rise early, sleep with the head to the north, in an airy, well ventilated room, the windows facing to the south, so as to admit the sun's rays as much as possible; sponge the body rapidly, wipe quickly, and rub the part with a coarse dry towel briskly, until the skin is red; and, unless used to bathing, cover over, and proceed in like manner with other parts of the body—time altogether not exceeding five minutes—once to three times a week.

AMAUROSIS.

PARALYSIS OF THE OPTIC NERVE.

The word is derived from the Greek, and means to darken or to obscure.

The eye, being an organ of special sense, is adapted only for the purpose of transmitting to the brain, by means of the sensorial nerve, the impressions of the rays of light which fall upon the retina.

In the normal action of this organ, the object perceived by the mind, and the rapid contractions and dilatations are simultaneous, because the eye and its nerves, with their centers, form a complete voltaic circle.

In amaurosis there is a complete or partial loss of sight; and although the eye appears perfectly natural, close inspection reveals that the pupil is more or less dilated, and is incapable of contracting.

Treatment.—Wet the cotton round both disks, with water; place the P disk on the closed eyelid; wet the hair on the lower portion of the back of the head; place the N disk on the wetted part, a little to the opposite side from the center of the eye under treatment. Time, not exceeding three minutes to each eye, every other day. Period of treatment, from one to forty applications.

DEAFNESS.

PARALYSIS OF THE AUDITORY NERVE.

The ear, being an organ of special sense, is only adapted for the purpose of transmitting to the brain, by means of the auditory nerve, the impressions of the vibrations of the air, which is propagated through the walls of the vestibule and cochlea, to the fluid within, in which float the filaments of the acoustic nerve. This nerve transmits the impression of sound to the mind, and when paralyzed, ceases to do so.

Application.—Attach the ear instrument to the P conductor, wet the sponge and place it in the tube of the affected ear, wet the hair on the lower portion of the head, and place the N disk at a point a little to the

center of the opposite side from the ear under treatment. Time, five minutes or less to each ear, every other day.

Note.—Lawrence states: “As a general guide, if the deafness varies with the weather, or the general state of the health, the application producing a humming noise, which ceases with the current, the patient may be certain of receiving benefit. Period of treatment, from one to thirty applications.”

Case 1.—Miss M——, Weston, C. W.; age 21. Had been exceedingly deaf for three years; supposed to be the result of cold. A piece of wet paper was wrapped round the terminal brass wire of the P conducting cord, and inserted in the right ear, while the N disk, also defended with paper, was placed behind the opposite ear. Time, two minutes. The poles were now reversed in the same manner with regard to the other ear, for same time. The patient was recommended to take one of my batteries, and after using it three weeks her hearing was fully restored.

Case 2.—Mrs. W——, hotel-keeper's wife, of Calmackie, near Morpeth, C. W. Having occasion to take shelter at a roadside inn, in a storm, found this lady so extremely deaf that I had to yell in her ear to make her understand. Made the application as in Case 1, resulting in the immediate restoration of her hearing. Some hours subsequently the husband returned home, and finding the amendment in his wife's hearing, he declared he did not know whether to be pleased or sorry, as he should now have to be very careful what he said in his wife's presence.

LOSS OF SMELL.

PARALYSIS OF THE OLFACTORY NERVE.

Treatment.—Attach the P conductor to the ear instrument; wet the sponge and insert it in the nostril; place the wet N disk on letter A, back of the neck. Time, two or three minutes every other day; period of treatment, one to fifteen applications.

LOSS OF TASTE.

Application.—Attach the ear instrument to the P cord, and place it on the roof of the mouth, then on the tongue. Put the other N disk on the back of the neck, then on the roof of the mouth, while the other is upon the tongue. Time, same as the foregoing.

LOSS OF VOICE.

PARALYSIS OF THE LARYNGEAL NERVE.

Application.—Attach the P cord to the throat instrument, and apply it over the larynx; place the wet N disk on the neck at letter A. Time, one or two minutes, every day; period of treatment, one to twelve applications.

Twelve applications cured Pellegrine, a man aged twenty-four, of sixteen months standing. A woman aged twenty-four, who lost her voice in consequence of chronic laryngitis, caused by syphilis, recovered completely in the third application. Girl, aged seventeen, who suffered from aphonia for seven months, recovered in thirteen applications. Another, of two and one-half years' standing, yielded to four applications. Girl, aged twenty-two, in Montreal hospital, recovered her voice on the first application under Dr. Reddy.

ANASTHESIA.

LOSS OF SENSATION OF THE SKIN.

Treatment.—The patient holds the wet P disk in his hand. The operator attaches the N cord to the fork, and applies its points lightly on the affected parts for a few seconds only at a time. This will bring back sensation in the part. Apply the fork over other portions the next or the day after.

Case.—O. M. Hyde, ex-mayor of Detroit; Anesthesia of the right side; loss of sensation of the skin; *motion* in this case of complete paralysis had returned first; sensation was restored within twenty-five minutes, in the arm. Next day the patient said he could feel a fly on the skin. He was now requested to take his time and use the battery every day on about two inches round the side affected, and in a week the whole sensibility of the parts was restored. Dr. Stewart had previously stated to me, “that if I succeeded in this case, it was more than any one in this city could do, for we have all been at him.”

PARALYSIS OF NERVES AND MUSCLES.

Practical rules from Duchenn, Becquerel, Myer, Lawrence and others:

1st. Electricity should never be used, so long as there are involuntary twitchings of the limbs, only as a counter-irritant.

2d. Electricity cannot prevent the coming on of atrophy; but after six or ten months the muscles begin to be nourished again, when electricity should now be used.

3d. Paralysis of large muscles require to and fro currents, and the applications require the poles to be of a flat and unyielding surface, and both placed upon the belly of the muscle.

4th. If the electro-muscular contractility is not lost, the local galvanization may be commenced at once.

5th. In all cases of Paralysis, the first object is to determine what muscles possess and what muscles have lost the power of electro-muscular contractility; for, on its presence, though not wholly so, depend the hopes of a more or less speedy return of voluntary contractility—the object and aim of all treatment; and with it, to a certain extent, at least, the nutrition and development of the muscles affected. Thus the electro-muscular *exploration* becomes at once a means of diagnosis and a method of cure.

Cures take place in the following order:

First in the muscles nearest the center of larger trunks of nerves, then sensation, next nutrition, then the tonacity appears, and lastly voluntary power.

The average period for the treatment of Traumatic Paralysis is three months, but many cases require several years.

PARALYSIS OF THE LOWER EXTREMITIES.

Treatment.—Place the soles of the feet on thick brown paper, thoroughly saturated with a solution of salt and water; place the P disk on the paper; the wet N disk must be put at letter C, on the spine, from ten to twenty minutes, then on letter I, on the lower portion of the spine, for same length of time. Use every other day.

PARALYSIS OF THE UPPER EXTREMITIES.

Treatment.—Place the hand of the affected limb in a bowl of salt and water; connect the P pole with the solution; place the N wet disk at letter C, for twenty-five minutes every other day.

PARALYSIS OF THE TONGUE.

Treatment.—Connect the P cord to a small silver spoon; apply it on the tongue; place the wet N disk on the upper portion of the back of the neck, from ten to twenty minutes, every other day.

CURVATURE OF THE SPINE.

Many deformities originate in a morbidly contracted state of certain muscles, the remedy for which is to call their antagonists into play. We have known several cases of wry neck, depending upon a permanently contracted state of the clavicular portion of the trapezius, cured by exciting strongly the corresponding portion of the healthy trapezius. The same treatment has been found to answer in contracted muscles of other portions of the body, and the shape of the vertebræ, which may be supposed to be present in cases of long standing, is no obstacle in reality to the cure.

The above cases require the to and fro currents from the electro-magnetic machine, and the poles should be of a flat and unyielding surface, covered with wet chamois leather, and placed upon the belly of the muscle; these poles should be made to correspond with the size of the muscle under treatment.

RHEUMATIC PARALYSIS.

In ordinary Paralysis, the cause is in the nervous system; in the rheumatic form, it is in the muscular.

If the nerve fails to transmit the impulse, the muscle will remain at rest, and no movement will take place; but if the nerve does transmit the motive impulse, and yet no muscular movement follows, it is evident that the excitability of the muscle has been impaired or suspended. This latter, then, is the condition in Rheumatic Paralysis.

This form of Paralysis is almost instantaneously relieved by means of the fork. The following case will, perhaps, afford the best idea of the electrical application in this form of Rheumatism:

Case 1.—Two young men, aged about twenty-five, respectively, both in the same ward of the Catholic hospital, Buffalo, had Paralysis of the deltoid muscle; unable to stir the arm, I was requested by Dr. Mackey to apply the current. Patient No. 1 held the wet P disk in the hand, the points of the silver *fourchette* (fork) were placed over the affected muscle for about four minutes, the skin was considerably vesicated, and the patient used the arm freely. Patient No. 2 was served in the same way, and he, too, used the limb freely in three or four minutes.

DISEASES REQUIRING THE ELECTRICITY CIRCULATING IN THE NERVES TO BE DECREASED.

These affections are generally caused by an excessive share of electricity in polar action—hence the nerves become unduly excited; the result is either pain or involuntary motions of the body.

Treatment.—Cause a portion of the electricity in the part affected to assume a state of rest.

NEURAGIA.

Lawrence says, “The various quack remedies advertised as specifics for the cure of this exceedingly painful affection, are the strongest proofs of its obstinate nature.

“The principle, or law, that a sudden or acute pain, developed on the surface of the skin, antagonized certain sciatic neuralgias, was derived from the veterinary art; and the result of electric cauterization in the treatment of this disease, in those cases in which medical treatment has been employed without avail, proves this law to be true.”

NEURALGIA IN THE FACE.

Application.—Place the wet P disk in the patient's hand. The operator will then attach the N conductor to the fork, and apply its points lightly over letter A, nape of the neck, or, in case of need, a more sensitive part, for a few seconds at a time. The object in all neuralgias is to produce a more intense pain than the original one. When this is accomplished, take away the fork, and both pains are gone.

NEURALGIA IN THE HEAD.

Application.—Same as the foregoing.

PLEURISY AND PAIN IN THE SIDE.

Application.—Apply the points of the fork lightly over the part affected for a second or two at a time, while the patient holds the wet P disk in the hand to complete the circuit.

LUMBAGO.

Application.—The patient holds the wet P disk, while the operator places the points of the N fork lightly over letter I, on the small of the back, a few seconds at a time for one minute, after which apply a strengthening plaster on the part.

SCIATICA. .

This formidable disease will not give way to ordinary treatment; the excruciating pain is, however, always instantly arrested by means of the fork, and an application of one minute will generally afford the patient a good night's rest. When the points of the fork are used, the patient of course always holds the wet P disk in the hand, to complete the circuit. After giving four or five applications, should the pain still return, make the application as follows, viz.: Place the wet N disk on the skin, under the foot; place the wet P disk over letter H. Time, one hour, every other day.

Note.—After the cure, should the limb be weak, simply reverse the poles for a few sittings.

CHOREA.

ST. VITUS' DANCE.

The spasms of Chorea differ from those of most other convulsive affections, in being unaccompanied either by pain or rigidity, the momentary jerking movements indicating rather a want of control of the will over the muscles than any real excess of their contractions. This affection proceeds from an excess of nervous force in the cerebellum. The object of electrical treatment can only be to lessen the excitability of the cerebellum,

and to augment that of the cerebrum, the seat of volition, until the former is brought under the subjection of the latter.

Treatment.—Give a general application to the spine, as for general debility; then place the P wet disk on the cerebellum—lower portion of the back of the head; place the wet N disk over and above the temples and forehead, from three to five minutes, twice a week. Attend to Rule A.

DELIRIUM TREMENS—SLEEPLESSNESS—MENTAL EXCITEMENT.

Application.—Place the wet P disk on the top of the head, previously wetting the hair, as it is a non-conductor. The soles of the patient's feet must be placed on a wet towel, or, better still, in a dish of water, and a little common salt thrown in. Connect this solution, or the towel, with the disk of the N conductor. Time, four to five minutes.

EPILEPSY, OR FALLING SICKNESS.

The sensations which precede the fit in some epileptics have been termed the "*aura epileptica*," from their supposed resemblance to a current of cold air passing over the body, from the extremities toward the brain, which we have reason to suppose is nothing more nor less than an over-distribution of nervous force rushing up to the "*medulla oblongata*." Frequently, however, neither the *aura* nor any other unusual sensation is felt by the patient preceding the fit. The condition of the epileptic is improved by everything which conduces to a quiet and hopeful state of the mind, and to a vigorous condition of the body; therefore,

the most careful inquiry should be instituted, with a view to the "*removal of special bad habits*" and occasional causes of depression. The electrical treatment consists in equalizing the nervous fluid by "*faradayizing*" the back of the neck :

1st. When the fit is apprehended, place the points of the silver fork on the back of the neck for a few seconds at a time, until vesication occurs.

2d. When the fit is on, wet the hair on the top of the head and place the P disk there, while the N disk is connected with a wet towel, and the patient's naked feet placed thereon. Time, not exceeding five minutes.

3d. Between the attacks, make the application as for general debility, and attend to Rule A.

Note.—Any further information, with regard to other medical treatment in combination with the electrical, can be obtained by addressing the author.

Case.—Miss Alison, aged 13, sanguine-nervous temperament, has been affected for three years, fits occurring sometimes once or twice a week, at other times once or twice a month. The day this young girl was brought to me, and the application about to be applied, a fit occurred. The current was sent as indicated in application 2. The moment the poles were connected, she instantly came out of the fit, to the surprise of the father, who said he had never known her to recover from a fit under ten minutes, and that it generally lasted from fifteen to twenty minutes. The applications were made three times a week, and continued twelve weeks. The fits returned at longer intervals, and the attacks were lighter, until they

ceased to return. She is now well, and has remained so for the past five years.

TETANUS—TRISMUS, OR LOCKJAW.

Application.—Place the wet P disk at letter A, back of the neck, and the wet N disk over the muscles affected, until relieved. Use salt and water for wetting the cotton on the disks.

Case.—Lady, aged 30, of a highly sanguine and nervous temperament, whose jaw had been locked and lower limbs rigid as a bar of iron for three weeks, brought on by mental emotion in consequence of some indiscretion on the part of the lady's husband, was treated as follows: The hair on the top of the head was wetted with salt water and the positive pole placed thereon; the wet negative pole was put over the upper part of the throat. A large wet towel was put in a dish and made to connect with the negative pole of another small battery, while the positive pole was placed over the lumbar region, small of the back. The patient's naked feet were now put in contact with the wet towel. During this application, the lady used the limbs freely. A half-hour before, when I tried to flex them, it had struck me, instinctively, if I should do so, I should have to break them first. The jaw, however, remained perfectly immovable, and continued so until the third electrical application, when the patient was enabled to use the jaw, and remained permanently cured.

ASTHMA.

The latest authority, Dr. Salter, thus describes the asthmatic paroxysm in this common but terrible disease:

“The patient goes to bed and sleeps two or three hours, becomes distressed in his breathing, and begins to wheeze, so as to waken those in adjoining rooms. He awakes, changes his position, falls asleep again and again, and the miserable fight between Asthma and sleep may go on, till the increased suffering does not allow the patient longer to forget himself for a moment; he becomes wide awake, sits up in bed, throws himself forward, plants his elbows on his knees, and with fixed head and elevated shoulders labors for breath like a dying man.”

The usual remedies for Asthma are numerous, but not to be depended on.

Asthma may be habitual, dry, or may occur in spasms, humid; it generally appears after some inflammatory affection of the respiratory mucous membrane, or it may be clearly hereditary, frequently affecting several members of the same family.

When the accumulation of mucus has reached a certain point, it over-stimulates the pneumogastric portion of the nerve governing the bronchia, and the reflex action produces the paroxysm, when the bronchia becomes unloaded of mucus for a time, only to reaccumulate again.

In the treatment of this distressing affection, the object aimed at is, to lessen the accumulations of mucus in the bronchia and to permanently allay the over-excitability of the pneumogastric nerve.

Plan.—Place the wet P disk over the back or on the side of the neck; now move the other naked tin disk rapidly, or more slowly, according to the delicacy

of the skin, over the whole of the upper portion of the chest, until the skin is thoroughly reddened; then cover over the naked tin disk, and apply it over figure 5, the lower part of the chest, for half an hour every second day.

Cures take place as follows, viz.: The intervals of attack are longer and longer apart, and the spasms are lighter progressively, until they cease to return.

Note.—A teaspoonful or more of the best Holland gin at bed time will facilitate the cure, as alcohol has a specific action on the state of the bronchial tubes in this complaint.

Case 1.—Jessie Kinsey, aged about 50, a farmer, had been affected with humid Asthma for four years and nine months; said he had been unable to work for half an hour at a time during all this period, that he was constantly wheezing. His breathing was very bad when he came to me. The skin was reddened over the upper part of the chest, and the current sent down from the back of the neck to the lower part of the sternum, chest, for half an hour, three times a week, and a weak solution of the tincture of *sanguinaræ canadensis*, bloodroot, taken in drop doses, until nausea was produced, and then continued in slightly smaller doses morning and evening. This gentleman, a Quaker, in six weeks told his neighbors and friends that he could now do as good a day's work as any of his hired hands.

Case 2.—Dunnine, a saddler, of Toronto, C.W., whose Asthma had continued for two and a half years. With the same localized electrical treatment only,

cured this patient in six weeks. He states that he knows that he is permanently well; because he could always bring on an attack by exposing himself to sudden changes of temperature, or carelessness in diet; but that now these exposures fail to produce an attack.

BRONCHITIS.

INFLAMMATION OF THE LINING MEMBRANE OF THE BRONCHIAL TUBES.

This is a disease of very common occurrence in moist and variable climates. When confined to the tubes—Tubular Bronchitis—it is seldom fatal in the first attack; but frequently extends to, or may even commence in, the small tubes—Vesicular Bronchitis—when the same symptoms are much more severe, and the electrical treatment must be combined with other remedial means. Counter-irritation, by means of the voltaic current, is the main dependence, and in the early stage of the attack usually subdues it entirely.

Treatment.—Place the wet P disk on the back of the neck, and with the other tin disk redden the skin of the upper portions of the chest thoroughly, morning and evening.

CHOLERA ASIATICA.

In Braithwait, vol. xxx., will be found reported seven cases, in various stages of Cholera, which were successively and successfully treated, by applying the wet P pole between the shoulders, on the spine, and the N disk over the abdomen. When the patients commenced to feel the heat of the disk, they began to recover, and the cures took place in the following order: First, the cramps subsided, then the vomiting, and lastly, on an average of six hours, the purging ceased.

Case.—Was called to see a German, aged 40, who was suffering most intensely with violent cramps extending to the lower limbs. Placed the wet P disk on the patient's hand, and applied the silver *fourchette* (fork) over the lumbar region, small of the back; the cramps subsided in about a minute, and did not return again. During the operation, the patient perspired profusely, and was well at the close of the day.

Plan of treatment for Cholera Asiatica: Place a thin copper plate, sufficiently large and made so to fit evenly, over the whole of the abdomen; connect the plate with the N conducting cord. Now place the wet P disk between the shoulders, on the spine. Should the case not give way within one hour, substitute a fresh battery for the other, in order that it may be cleaned, dried, charged, and re-applied in case of need, while the other is prepared in the same way, as the current ceases in about an hour from the time the battery is charged.

We would advise all to have by them, during cholera seasons, a mixture of equal parts by weight of camphor gum and alcohol. Give, in conjunction with the electrical treatment, from four, ten, fifteen to twenty drops, on sugar, in as many minutes, until relieved.

DISEASES OF A TORPID OR CONGESTIVE NATURE.

Treatment.—Submit the part affected to the positive outgoing, or *warm*, half of the galvanic current.

TORPIDITY OF THE LIVER.

Application.—Place the wet P disk a little above

the hip of the opposite side of the body from the liver, and the wet N one over the region of the liver, for ten minutes; then shift the P disk to the naked sole of the foot, ten minutes longer.

CONSTIPATION.

Application.—Connect the throat instrument with the P disk, and direct the patient to introduce it into the back of the mouth; place the wet N disk to the anus. Time, three to five minutes every other day.

DYSPEPSIA.

SLOW DIGESTION.

It has truly been said, "The stomach is the workshop of the living animal;" for it is here where the food becomes converted into chyme, by the solvent powers of the fluid called gastric; it is here where the capillary blood vessels imbibe the dissolved azotized neutral substances and the water; the residue, passing on into the duodenum, is changed into chyle. Well prepared chyme is the natural *stimuli* of the *duodenum*, *liver*, and *pancreas*, and pure chyle is the appropriate excitant of the *lacteal* vessels; consequently, when the stomach ceases to do its appropriate work, it directly involves the other organs, and intimately affects the mind.

The prompt removal of nausea, distension, weight, oppression, and spasmodic pains of the stomach, and the general languor and debility, are evidences of the value of the galvanic current in Dyspepsia.

Treatment.—Place the wet N disk over No. 9, the pit of the stomach; place the wet P disk on letter C, to complete the circuit. Time, one hour and a half,

every day. We have known cases of many years' standing, after all other means had been tried in vain, to yield to this, in from four to ten days.

Note.—It will be necessary to tie a broad ribbon round the waist, to keep the disk in its place; the dress will secure the other disk in its position.

Observation.—Should this application fail to benefit, we may conclude the mischief is owing more especially to an absence of nervous rather than of muscular electricity. In this case, simply reverse the poles for the same length of time—place the P disk on the pit of the stomach and the other at letter C.

Case 1.—Thomas Carr, Esq., barrister, Strathroy, C.W., aged 40. Had been suffering from Dyspepsia for some time; had tried the various usual remedies. Application: The wet P pole was placed over the pit of the stomach, the wet N one on the back of the neck. Time, half an hour. Experienced decided relief. The day following, application same as before, with the same good results. He got one of my instruments; after wearing it four or five days, he called to say he could now eat without any distressing symptoms following.

Case 2.—Mr. Alex. Anderson, of London, C. W. Had suffered from Dyspepsia for the last twenty years. Said he had tried everything. Was directed to send the current from the pit of the stomach to the back of the neck, as in case 1. Used it four times. This gentleman, some three months subsequently, called on me, and said he could eat and digest anything, and had improved in weight twelve pounds.

Case 3.—Mrs. Gorely, of London, C.W., aged 35, married. Confined more or less to her bed for the last sixteen months. Application: The current in this case was reversed—the P pole was placed on the back of the neck and the N pole on the pit of the stomach. Time, twenty minutes, every second day, for three weeks. Can now eat three meals a day; before, she could only partake of two very light meals. Her general health has greatly improved. Would not be without the battery for any consideration!

DISEASES OF AN ACTIVE OR INFLAMMATORY NATURE.

Treatment.—Submit the part affected to the influence of the ingoing, or cold, half of the galvanic current.

INFLAMMATORY RHEUMATISM.

Application.—First, make the application as for general debility, with these exceptions, viz.: The N disk must be in contact with a solution of strong ley, and the soles of the feet placed therein. The P disk, saturated with the same solution, must be passed all over and down the spine; then thoroughly saturate two bands of coarse brown paper in the same solution, and apply as follows, viz.: If the shoulder is affected, wrap one of the bands round the arm at 6, and connect it with the N disk. Make a pad of the other band, and place it at letter O, on the back. If the elbow, fold a band round the arm above and one below 11, place the P disk on the upper and the N on the lower band. If in the knee, fold bands at the numbers, one

above and the other below the joint, P on upper, N on lower band. Proceed in like manner when the ankles or wrists are affected. Time, in every case, ten minutes.

Case.—Mr. McIntosh, of London, C.W., aged 55. Had been subject to frequent attacks for the past five years. Generally confined to bed from six to nine weeks. The fingers were stiff and useless from deposits of lethate of soda. Present attack commenced four days ago in the shoulder, and extended to the left hand and fingers. Ten minutes' application with alkaline solution enabled the patient to dress himself, while previously two persons were required to take off his coat. Three applications a week, for six weeks, enabled the patient, as he expressed it, to use these useful members—the hands—freely.

INFLAMMATION OF THE LIVER.

Application.—Place the wet P disk over No. 8; place the wet N disk above the hip on the opposite side of the body for ten minutes, then shift the N disk to the sole of the right foot for ten minutes longer.

ACCUTE INFLAMMATION OF THE EYE.

Application.—First give the general application as for fever. Then place the wet P disk all round the region of the eye for five minutes. Direct the patient to hold the wet N disk in the hand on the same side with the eye under treatment.

Another plan is, to place the P wet disk over the closed eyelid, the patient, as above, holding the wet N disk. Time, not exceeding three minutes.

Another: Place the wet P disk in the patient's

hand; let the assistant apply the naked N disk for a few seconds at a time over the temple of the eye affected, the object being to create a redness of the skin.

APOPLEXY.

The electricity of the nervous system, in this affection, is concentrated upon the great nervous centers; hence, a rush of blood follows.

Treatment.—Place the patient's naked feet in a tepid solution of salt and water; connect this with the N disk. Let the operator pass the wet P disk three or four times down the spine, from top to bottom, then wet the hair on the top of the head, and hold the P disk there not exceeding five minutes. If consciousness has not returned, repeat the application down the spine only, until the senses are restored.

DISEASES OF THE GENERATIVE ORGANS.

ABSENT AND SUPPRESSED MENSTRUATION.

Treatment.—Attend to Rule A, and give the applications as for general debility; then, during the week of the new and the full moon, make the applications as follows, viz.: Attach the N conductor to the womb instrument, and introduce it into the vagina, until the wet sponge touches the os, or mouth of the womb; place the wet P disk at letter A, on the back of the neck. Time, one hour at bed time. By this operation the womb will be brought under the influence of the warm, expansive, half of the current.

IMMODERATE FLOW OF THE MENSES.

FLOODING.

The cause of this formidable, and often exceedingly dangerous affection, is simply owing to a relaxed or dilated state of the muscular orifices, or mouth, of the blood vessels of the inner surfaces of the womb; hence their contents are poured out.

Treatment.—Submit the organ to the cool and contractive influences of the ingoing half of the electric current.

Application.—Attach the P conductor to the womb instrument; introduce it into the vagina until the wet sponge touches the os, or mouth of the womb; the N disk at letter G, on the back. Time, until the flow is arrested.

FALL OF THE WOMB.

This very common complaint is caused by a weak or relaxed state of the muscles and ligaments supporting the womb.

Treatment.—The cord leading from the P pole must be attached to the vaginal instrument; wet the sponge and introduce the instrument into the vagina until the sponge touches the os, or mouth of the womb; then place the wet N disk, attached to the other cord, on letter G, on the back. Time, twenty to thirty minutes, every day. Period of treatment, from two to fifty applications.

LEUCORRHŒA, OR WHITES.

Application.—Attach the N conductor to the metallic vaginal instrument; introduce it into the vagina; place the wet P disk at letter H. Time, one

minute, twice a week, and give one or two applications as for general debility. Attend to Rule A.

SPERMATORRHEA.

This affection is owing to a weakness of the muscular structure of the "seminal ducts," and though little expected, is the fruitful source of most of the ailments of the present generation. From whatever cause it may spring, one thing is certain, and that is, the "seminal ducts"—a muscular structure—in this widespread complaint, are simply in a positive, expanded, or weakened condition, and unable to contain the *semen*.

The only object to be obtained in the permanent cure of this disease is, first, to religiously avoid the cause from whence it springs, and, secondly, to restore the natural tonacity of the weakened muscles. Provided the first is strictly observed, the second is easily accomplished, and is certainly much more preferable than the usual very dangerous plan of burning the mouths of these ducts by the means of caustics, in order to contract them.

Treatment.—Submit the "seminal ducts" to the influence of the cold half of the voltaic current, until the muscles regain their lost negative condition.

Application.—Place the wet P disk between the anus and scrotum, and the wet N disk at letter H, on the spine, for twenty-five minutes, every other day. Attend to Rule A.

Further information can be obtained by addressing the doctor.

Case 1.—Mr. M——, aged 23, came to me very much emaciated. Had “seminal emissions” nightly for three years; declared he had tried all the various “quack” remedies; had just come from Amos & Son, Buffalo, where he had been under treatment for three months; and declared to me that he had given up all hopes, and intended to blow his brains out rather than live any longer—unfit to work and feeling too miserable to live; that he had been urgently requested to try my treatment, before putting his desperate resolve into execution. This patient took a battery, and used it for one week, when he called on me, stronger in mind and physical vigor, to express his thanks and to introduce a friend in a similar position. In six weeks, both these young men were well and resumed their usual occupations.

Case 2.—Mr. D——, hotel-keeper, aged 50, married, no family. Had been suffering in mind and body for some years—the memory deficient, the mind cloudy and hypo. Received three applications in the manner stated, with the happiest results. He then purchased a battery, and applied it himself for eight weeks, when the emissions ceased entirely, and his natural vigor of the sexual organs was wholly restored, it having been previously lost.

DROPSY OF THE SCROTUM.

Treatment.—Attach a fine-pointed silver needle to each of the terminal brass wires of the conducting cords, and apply their points in the sac, upon opposite points of the circumference of the tumor, for ten or fifteen minutes, every other day. The water will

become absorbed in a few applications, but may accumulate again; the electrical current to be used until it ceases to refill. *Note.*—The intervals of refilling are progressively longer apart.

HEADACHES.

Application.—Place the wet P pole over the part affected. The patient holds the wet N disk in the hand, to complete the circuit. Time, one to five minutes. If the stomach is the cause of the ache, make the applications the same as for Dyspepsia.

DISEASES REQUIRING ELECTRO-CHEMICAL DECOMPOSITION TO BE PRODUCED.

In the treatment of these diseases our object is:

1st.—To decompose the morbid deposits.

2d.—To disperse it by absorption.

Note.—At the end of the application, give the general treatment, in order to arouse the absorbents; seat the patient on the wet P disk, and apply the wet N disk over the chest, stomach and bowels.

CANCERS.

An electro-lytic institution has been founded in Moscow, under the direction of several medical gentlemen, who report to have cured sixteen cases of Cancer, and to have removed the whole of a female breast without the use of a knife or the tying of an artery.

Treatment.—For an open Cancer, attach a small silver plate to the brass wire of the P conducting cord,

and apply it on the open sore, and attach the brass wire of the N conducting cord to a small zinc plate; place the latter on another part of the sore.

The application will produce a coagulated crust over the surface, under the silver, and when this sloughs off there will be a healthy sore; the foetid smell, the constant severe pain, and the hardness will be greatly relieved.

GOITRE—THICK NECK.

Treatment.—Submit the enlargement to the influence of the contractive cool half of the current.

Application.—Apply the wet P disk over the circumference of the swelling; at the same time place the wet N disk over the entire spine, commencing at A, then at B, etc., allowing the disk to remain for one minute at each joint of the spine—every other day.

CATARRH.

Numbers are suffering from this disease, because in its early stage it is considered to be merely a common cold, and consequently allowed to pass into a chronic or negative condition, in which state it may continue for years, the acrid poison gradually involving the whole of the air passages and lungs. It does not appear to be curable by ordinary means, but it is readily removed by the mild streaming electric current, if not too far advanced.

Treatment.—Place the wet N disk at the root of the nose, roof of the mouth, the throat and upper part of the chest. At the same time, direct the patient to sit upon the wet P disk. Time, from five to twenty-five minutes, according to circumstances, every other day.

Case.—Catarrh of the head and nose. E. Paul, aged 18 years, had been suffering for eight years. A piece of wet paper was wrapped round the terminal wire of the N conducting cord, and inserted in the nostril; the wet P disk placed on the forehead, a little to the opposite side of the nostril under treatment, for one minute; the other nostril served in like manner, for same time, increasing the time of sitting to two minutes, every alternate day. Patient was discharged free of all symptoms of Catarrh, in two months.

RHEUMATIC EFFUSION IN THE JOINTS.

The application of the electric current to joints which are stiff and distended with fluid, will succeed in rendering them supple, and its continued use will effect the absorption of the fluid.

Application.—Apply a disk on each side of the joint. It matters not which pole, the object being to pass the current through and through the part. The N disk should be wet in a solution of strong vinegar.

RHEUMATIC GOUT.

PAIN IN THE SMALL JOINTS.

Mix thoroughly a teacupful of good dry hardwood ashes with one pint of scalding water. When sufficiently cool, wet both the disks thoroughly with the solution, and apply the one leading from the P pole two inches above the part affected; the other disk two inches below the affected part. Time, from five to ten minutes, or until the pain is gone.

Pure Rheumatism attacks the large joints. Rheumatic Gout generally visits the small ones. Men have often pure Gout—women seldom. They suffer more

from a combination of the two, and have Rheumatic Gout. They get the swelled joints in their fingers and toes, but seldom the chalk stones.

The plan of the electrical applications will be best illustrated in this affection by the following cases:

Case 1.—Miss McDonald, aged 18, of London, C. W. Gouty effusion in the metacarpel joint of the right thumb; had not slept the past two night, from the excruciating pain; pulse 120; other remedies had no effect in allaying it; had fainted twice to-day. In the evening I was called to see this young lady. The tip of the thumb was placed in a strong solution of ley, made from wood ashes. The N pole was now put in contact with the solution, while the P disk, folded round with paper well saturated in the same ley, was placed about two inches above the inflamed part, so as to allow the current to pass through it. The pain entirely subsided within five minutes. I left the patient a mixture to take internally at bed time, which she (deeming herself well, being still free from pain,) had omitted to do. In six hours after, the pain returned with the same intensity. The current was again applied as before, and with the same result. The mixture left was ordered to be taken, and the patient remained free from pain.

Case 2.—Miss S——, Grisswold- street, Detroit; servant, aged 22; attacked in the wrist and fore finger; in the morning unable to attend to her duties; pulse, 115. Being much pressed for time, I gave her a hasty application, without the alkaline solution, which had the effect of considerably allaying the pain. In the

evening I was called to see her, and found her in bed ; pulse, 130 ; applied as in case 1, with a strong alkaline solution, together with mixture taken internally. The next day patient resumed her work.

OPACITY OF THE CORNEA.

“This is the result of adhesive inflammation. The current acts most beneficially in those cases where the effusion has taken place between the layers of the cornea, and has not become organized.

Application.—Connect a small ball of silver to the cord leading from the N pole ; place it lightly over the opacity ; place the tin disk in the patient’s hand. Time, a few seconds at a time. A pricking, burning pain will be experienced, the conjunctiva will redden, and some lacrymation be produced ; but these effects will quickly subside on applying cold water. If the opacity begins to break up under the application, it will soon disappear.”—*Lawrence.*

EXTRAORDINARY CURES.

The address of any of the parties whose initials are given in the following cases, may be obtained by any person who, deeming himself to be similarly affected, feels desirous of communicating with the party.

CASES OF PARALYSIS.

Right Wrist.—Four years and a half standing—very great difficulty in using the pen. Case—Mr. B., of Chatham, C. W. One application of ten minutes *cured this case.*

Eyelids.—C. H., of Detroit, U. S., some years previous received a kick from a horse, injuring the frontal bone. Four applications were given to the patient, when he was enabled to raise the lids without the use of his fingers.

Right Arm.—Mr. I., farmer of Aylmer, C. W., received an injury from a falling tree, striking the shoulder, twenty-four years ago; unable to lift the arm. One application of ten minutes enabled the patient to use the arm freely, and he declared he was now worth two dollars a day.

Left Arm.—Mrs. S., of Bayham, C. W., had been unable to use the arm for fifteen years. After ten minutes' application, the patient used her arm freely.

Left Arm.—Mrs. Capt. C., of Windsor, C. W.; total loss of motion and sensation for three months. In fifteen minutes the arm was completely restored.

NEURALGIA.

Mrs. Woods, of 29 Abbott street, Detroit, U. S.; severe intermittent pain; commenced seven years ago, first in the small toe of the left foot, shifting occasionally near the ear, in the back of the head; severe pain every morning, in the right temporal region, for the last four years; pain in the right shoulder, and contraction of the muscles of the right arm and fingers; numbness in the right arm and left leg. The electrical applications were continued for nearly five weeks, when she was dismissed, cured. The arm was restored to use on the first application.

Miss S., Dundas street, London, C. W.; severe inter-

mittent pain in the face for three days. One application of three minutes permanently cured the patient.

Mrs. G. C., of Talbot street, London, C.W. Severe "tic" in the face, for three night; the last attack kept the family up all night. One application completely cured this lady.

Miss S. J. K., of Sparta, C.W. Severe intermittent pain in the face for three weeks. Three or four teeth had been extracted, but the pain continued. An application of one minute entirely cured this patient.

Mr. D., of Aylmer, C.W. Severe intermittent pain in the face for one week. Two applications, of one minute each, entirely cured this patient.

Mrs. O., of London, C.W. Sciatic nerve, excruciating pain in the left limb for some days. Fifteen applications entirely cured this lady.

Miss N., of Lobo, C.W. Sciatic nerve, great pain in the hip and left limb for some weeks. Applications every forty-eight hours, during six months, cured this lady.

TUMOR.

Mrs. B., of London, C.W. Tumor the size of a large pea on the lower eyelid; had been forming for three years. Four years previously a tumor was removed from the same lid by the knife. Application, three minutes every forty-eight hours. Treatment continued for two months, when the tumor had entirely disappeared.

ACUTE AND CHRONIC INFLAMMATION OF THE EYE.

Mr. B., of Aylmer, C.W. Attack commenced in one eye thirty-six hours previously, now extended to

the other; obliged to keep both from the light. Two applications, of ten seconds each, and other chemical means, cured this patient entirely in thirty hours after.

Miss C. H., of Norwichville, C.W. Chronic sore eyes for three years past; lids of both eyes drooping; the eyes appear to be half closed; cannot perceive a marble at two yards' distance. Three weeks' application, of three minutes, every forty-eight hours, entirely cured this patient.

SUPPRESSED MENSTRUATION.

Miss A. B., Strathroy. Catamenia absent for two years. One application succeeded in restoring the menses.

GENERAL DEBILITY.

Mr. B., of London, C.W., had applied the battery a number of times; always felt better after using it; has gained in flesh considerably; had tried other means, water-cure institution, etc.; experienced the best results from the use of the battery.

From the British American Journal.

PALMER'S ELECTRO-VOLTAIC INSTRUMENT.

We were exceedingly pleased, a few days ago, in having been waited on by Dr. Palmer, a gentleman from London, C.W., who called to make us acquainted with an instrument devised by himself, intended for the purpose of transmitting through any portion of the body a continuous stream of galvanism. It is exceedingly simple in its construction, and is at once put into action by merely damping the tubes by diluted acetic acid.

The current thus evolved is continuous and unremitting, and when the little battery is enclosed in its card

case it will continue to generate the excitement for a considerable time without redamping.

Although the current possesses sufficient force to overcome the resistance of the bodies of six or more persons in contact, if properly managed; yet, by applying the moist sponges which may be attached to the conductors, its intensity becomes very much mitigated; so much so, as to become scarcely perceptible to the great majority of individuals, and therefore by no means unpleasant.

The shape of this truly valuable little instrument, and its size, adapt it for the waistcoat pocket; while the simple, uncomplicated and ready mode for procuring from it an uninterrupted stream of galvanism, are important considerations, and in striking contrast with the cumbrous and troublesome intermittent-current batteries now in use, and which we venture to predict it will completely supersede.

Dr. Palmer has patented his invention in this province, and steps are being taken to secure patent rights in the United States, Great Britain, France, and Germany.

Its low price, which varies with its size, from \$8 to \$14, highly recommends it to general favor among the profession; and we hope that, while this invention will unquestionably tend to the relief of human suffering, it will also return an ample reward to the patentee. It has been already tried in some of our hospitals; and in the original department of this number we have inserted a short report of a number of cases in which its employment has been highly satisfactory.

*From Mr. THOMAS JOHN HAYES, Resident Medical Officer,
Toronto General Hospital.*

I have tried Mr. Palmer's Pocket Voltaic Battery on several patients, with the consent of the respective

medical officers interested in the cases, and must say that the relief afforded was in most instances very satisfactory.

A female patient was brought from the police station yesterday, in a state of high nervous excitement. I requested Mr. Palmer, who was then in the hospital, to try his battery, which he did with most extraordinary success. The patient became perfectly calm within a period of five minutes, and in less than fifteen minutes was in a quiet sleep, which lasted for nearly nine hours, without any depressing effect on the system. This woman was not under the influence of alcohol at all. I believe her excitement is caused by some domestic affliction. From what I have seen, I believe Mr. Palmer's invention will prove a very valuable aid in practice.

TORONTO, 13th March, 1861.

From ROBERT CRAIK, *Attending Physician, Montreal General Hospital.*

I have had the pleasure of observing the effect of electricity, as applied by means of Mr. Palmer's Pocket Battery, in several painful diseases, and have no hesitation in declaring the beneficial effect to be more rapid and complete than after any of the methods formerly in use. I give in illustration the following case:

Harriet Pepper, a patient in the Montreal General Hospital, had been suffering from severe muscular pain in the right shoulder and arm, to such an extent as to render even slight movement intolerable. By the use of the battery, she was able, in less than five minutes, to move the arm freely above her head, and to dress herself without assistance. After the lapse of forty-eight hours the pain had not returned.

MONTREAL, 10th May, 1861.

MONTREAL GENERAL HOSPITAL.

Case Reported for JOHN REDDY, Esq., M.D., Attending Physician.

16th May, 1861.—Bartholomew Enwright, aged 43 years, was admitted on the 16th May, 1861, laboring under Phthisis.

17th May, 12 noon.—He complained of a severe rheumatic pain, (from the humeral articulation to the tips of his fingers,) which had been coming on for a year. Dr. Reddy applied the voltaic battery (Palmer's patent); the pain ceased at once, and he could move his arm with ease and freedom, which before the application was attended with great suffering.

2 p. m.—The pain returned, but not as sharply as before.

18th May, 12 noon.—Applied the battery with the same result, and the pain did not return until 3 p.m.

19th May, 9 a. m., Sunday.—Same application, and he remained free from pain until 4 p. m. The pain has assumed a dull form, instead of the shooting, sharp feeling which existed before.

20th May.—Same good result on the application.

21st May.—The same as yesterday. General health better.

22d May.—The pain has not returned since yesterday, and, with the exception of a dull, heavy feeling, the arm is completely restored to use.

23d May.—The pain has ceased altogether.

J. D. McCORD,
Dresser to Dr. Reddy.

CHICAGO, June 7, 1866.

This is to certify, that I have examined Dr. H. Palmer's Voltaic Pocket Battery, both with reference to its applications in medical treatment and to electro-chemical decomposition, and find that it furnishes a reversible current of sufficient intensity for the treat-

ment of a large proportion of cases of paralysis or of neuralgia, if properly and scientifically applied.

It can also be used for illustration of the principles of electro-chemical decomposition, of the electrotpe, and of deposition of metals upon conducting surfaces.

It has the further recommendation, that it requires no fluid battery or cumbersome coils for its excitation, and can be carried in the pocket.

JAMES V. Z. BLANEY,

Professor of Chemistry in Rush Medical College.

CHICAGO, 14th August, 1866.

I have used the Pocket Voltaic Battery of Dr. Palmer in several cases, and find it a very convenient and efficacious instrument for applying the continuous electric stream, voltaic.

I am most happy to recommend it to the profession.

E. L. HOLMES, M.D.

CHICAGO, 14th August, 1866.

I agree fully with the above expression, as to the value of the Battery of Dr. Palmer, which, so far as I have tried it, I have found efficient—the most so of any I have seen within a similar compass.

J. S. JEWELL, M.D.,

Professor of Anatomy, Chicago Medical College.

The Voltaic Pocket Battery introduced by Dr. Palmer, in my opinion, is one of the most compact, portable, and convenient little instruments I have ever seen; it is especially useful in muscular rheumatism and pains of a neuralgic origin, and for faradayizing the skin, in which I have tried it, and I do not doubt it will be found serviceable in a large class of other forms of disease.

B. P. REYNOLDS, M.D.

CHICAGO, Sept. 10, 1866.

Price \$5

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